

PATENT COOPERATION TREATY

PCT

10/517721

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

REC'D 27 AUG 2004

WIPO

PCT



Applicant's or agent's file reference 90909a/se/ds	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/06400	International filing date (day/month/year) 11.06.2002	Priority date (day/month/year) 11.06.2002
International Patent Classification (IPC) or both national classification and IPC H04N7/52		
Applicant TELEFONAKTIEBOLAGET L M ERICSSON (PUBL)		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 10 sheets.

- This report contains indications relating to the following items:
 - ☒ Basis of the opinion
 - ☐ Priority
 - ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Lack of unity of invention
 - ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Certain documents cited
 - ☐ Certain defects in the international application
 - ☐ Certain observations on the international application

Date of submission of the demand 09.01.2004	Date of completion of this report 23.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - Giltshiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer Gries, T Telephone No. +49 30 25901-429 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP 02/06400

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

Description, Pages

1, 3, 5-26 as originally filed
2, 4 received on 28.06.2004 with letter of 28.06.2004

Claims, Numbers

1-14 received on 06.08.2004 with letter of 06.08.2004

Drawings, Sheets

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 02/06400**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-14
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1: WO 97/46027 A (SARNOFF CORP) 4 December 1997 (1997-12-04)

The document D1 is regarded as being the closest prior art to the subject-matter of **claim 1**, and shows (the references in parentheses applying to this document):

a method and apparatus of generating a mixed media stream from input media streams (D1, page 1, lines 10-12) having payload data elements and related identifiers, comprising the step of aligning the input media streams according to a pre-specified relation between identifiers in different input media streams (the offset of the PTS for the video respectively audio access units in D1, page 8, lines 5-17)

from which the subject-matter of claim 1 differs in that

(see characterising part of claim 1)

the **pre-specified relation** between identifiers in the media streams of a first type **is matched to a relation** between identifiers in further input media streams of a second type used during generation of a further mixed media stream from the input media streams of the second type, and the **matching** of relations between identifiers in the media streams of the first type and the further input media streams of the second type **is achieved by identifying an intersection** between the input media streams of the first type and the further input media of the second type, **determining a relation** between identifiers in the further input media streams of the second type for those further input media streams which are comprised in the intersection, **aligning the input media streams** of the first type which are comprised in the intersection **according to the relation** of identifiers in the further input media streams.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as the generation of mixed media streams by generating them with the related input media streams being aligned according to the same relative relation between identifiers. The generated mixed media streams are generated using the same relative relation between identifiers in the related groups of input media streams.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 02/06400

No single prior art document nor a combination suggests or hints at the problem of generating mixed media by exploiting the relative relations between identifiers and intersections between the input streams when several output streams are generated.

The solution to this problem proposed in claim 1 of the present application is therefore also considered as involving an inventive step (Article 33(3) PCT).

Claims 2 until 7 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Claims 8-13 describe an apparatus having means (units) which perform the method steps as disclosed in the corresponding claims 1-6 and the same novelty and inventive step observations as above apply, *mutatis mutandis*.

Claim 14 describes a computer program product directly loadable into the internal memory of a mixer unit comprising software code portions for performing the method steps of one of the claims 1 to 7, when the product is run on a processor of the mixer unit and the same novelty and inventive step observations as above apply, *mutatis mutandis*.

The proposed method, apparatus and computer program product are industrial applicable in the field of processing of digital data.

Currently, the matching of such video and audio or in more general sense mixed media streams require a complicated procedure. Normally, time stamps are used, e.g., as outlined in WO 97/46027 or US-A-5,661,665, which will be attached to the different signals to enable the matching of the related media streams. However, while this at least is some mechanism to a match the mixing of different media streams, currently, there does not exist any solution to the problem how the generation of mixed media streams of a different type, e.g., a mixed video stream and a mixed audio stream may be coordinated.

SUMMARY OF INVENTION

In view of the above, the object of the present invention is to provide a mechanism for coordination during generation of a plurality of mixed media streams.

According to the present invention, this object is achieved through a method of generating a mixed media stream having the features of claim 1.

In the sense of the present invention a media stream is generated in a packet switched transmission process typically by a user end equipment. One example of an input media stream may be a voice data packet stream or a video data packet stream which is generated in a video

Here, use is made of identifiers being available in the input media streams. As outlined above, in each media stream there are available identifiers defining an order of data packets in that media stream. The same also applies for all other input media streams which will finally be used to generate a specific mixed media stream.

Therefore, at a certain point in time one may consider a tuple of such identifiers in each input media stream as a relation which may then be compared to a pre-specified relation.

In other words, each such tuple defines a relative alignment of input media streams which may be changed according to a pre-specified relation either through advancing or delaying input media streams in time.

Therefore, the result of the inventive method is a modification of the relative alignment of input media streams according to a pre-specified relation of ordering for the input media streams before generating the mixed media streams. It should be noted that such an alignment is related to the relative alignment of input media streams only and does not rely on absolute time.

Also, according to the present invention the pre-specified relation between identifiers in different input media streams is matched to a relation between identifiers in further input media streams used during generation of a further mixed media stream.

10/517721

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 02/06400

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N7/52 H04N7/24 H04N5/265 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, IBM-TDB, COMPENDEX, INSPEC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	WO 97 46027 A (SARNOFF CORP) 4 December 1997 (1997-12-04) page 2, line 4 - line 16 page 4, line 20 - line 23 page 6, line 2 - line 8 page 6, line 24 - line 33 page 8, line 3 - page 9, line 19; claims; figures ---	1, 10 2-9, 11-19
Y A	US 5 661 665 A (GREEN JAMES L ET AL) 26 August 1997 (1997-08-26) abstract column 1, line 60 - column 2, line 39 column 6, line 8 - line 13 --- -/-	1, 10 2-9, 11-19

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

25 February 2003

Date of mailing of the international search report

05/03/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Gries, T

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 02/06400

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 018, no. 567 (P-1820), 28 October 1994 (1994-10-28) & JP 06 208361 A (S R SOKEN KK; OTHERS: 02), 26 July 1994 (1994-07-26) abstract ---	1-19
A	US 5 777 612 A (KATAOKA HIROSHI) 7 July 1998 (1998-07-07) abstract column 2, line 8 - line 27 ---	1-19
A	HERNG-YOW CHEN ET AL: "MULTISYNC: A SYNCHRONIZATION MODEL FOR MULTIMEDIA SYSTEMS" IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, IEEE INC. NEW YORK, US, vol. 14, no. 1, 1996, pages 238-248, XP000548825 ISSN: 0733-8716 page 238, left-hand column, paragraph 1 -page 240, left-hand column, last paragraph; figures 2,3 ---	1-19
A	US 5 611 039 A (NOBORI KUNIO ET AL) 11 March 1997 (1997-03-11) abstract column 2, line 1 - line 28 ---	1-19
A	US 5 515 490 A (ZELLWEGER POLLE T ET AL) 7 May 1996 (1996-05-07) abstract column 2, line 9 - line 16 column 6, line 23 - line 58 column 10, line 37 - line 55 ---	1-19
A	EP 0 944 249 A (SONY CORP) 22 September 1999 (1999-09-22) abstract page 5, paragraph 40 -page 6, paragraph 42 -----	1-19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 02/06400

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9746027	A	04-12-1997	EP 0901718 A1	17-03-1999
			JP 2002503402 T	29-01-2002
			KR 2000016034 A	25-03-2000
			WO 9745965 A1	04-12-1997
			WO 9746027 A1	04-12-1997
			US 6181383 B1	30-01-2001
			US 6137834 A	24-10-2000
US 5661665	A	26-08-1997	NONE	
JP 06208361	A	26-07-1994	NONE	
US 5777612	A	07-07-1998	JP 8263030 A	11-10-1996
US 5611039	A	11-03-1997	JP 3072449 B2	31-07-2000
			JP 6168577 A	14-06-1994
US 5515490	A	07-05-1996	NONE	
EP 0944249	A	22-09-1999	EP 0944249 A1	22-09-1999
			US 2002080875 A1	27-06-2002
			CN 1244325 T	09-02-2000
			WO 9918720 A1	15-04-1999
			JP 11220655 A	10-08-1999